MAKING MODERN LIVING POSSIBLE

Installation Guide

ECtemp 535

Electronic Thermostat

www.EH.danfoss.com

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1 Introduction

ECtemp 535 is an electronic timer temperature controller, specially designed for floor heating systems. The thermostat is provided with a room sensor to control the room temperature and an additional floor sensor to limit the maximum floor temperature. The thermostat can be either flush-mounted or surface-mounted.

Once set, the thermostat will automatically adjust the heat to meet your comfort requirements by measuring the floor temperature and combining it with the measured air temperature regardless of changing weather conditions.

The thermostat has buttons for adjusting the temperature setting, and a LED indicator showing standby periods (green light) and heating periods (red light).

More information on this product can also be found at: ectemp.danfoss.com

1.1 Technical Specifications

Operation voltage	220-240V~, 50Hz
Standby power consumption	Max 0.30W
Relay: Resistive load Inductive load	 Max 15A / 3450W @ 230V cos φ= 0.3 max 1A
Sensing units	NTC 15kOhm at 25°C
Sensing values: 0°C 25°C 50°C	 42kOhm 15kOhm 6kOhm
Hysteresis	± 0.2°C with room sensor ± 0.4°C with floor sensor only
Ambient temperature	-10°C to +30°C
Frost protection temp.	5°C - ❄

Temperature range	5-35°C with room sensor 5-45°C with floor sensor only Floor max 20-50°C Floor min 10-35°C, when installed with combination of room and floor sensor
Cable specification max	1x4mm^2 or 2x2,5mm^2
Ball pressure temperature	75°C
Pollution degree	2 (domestic use)
Type	1C
Storage temperature	-20°C to +65°C
IP class	31
Protection class	Class II - ⧈
Dimensions	85 x 85 x 54mm (in-wall depth: 24mm)
Weight	107g

The product complies with the EN/IEC Standard "Automatic electrical controls for household and similar use":

- EN/IEC 60730-1 (general)
- EN/IEC 60730-2-7 (timer)
- EN/IEC 60730-2-9 (thermostat)

1.2 Safety Instructions

Make sure the mains supply to the thermostat is turned off before installation.

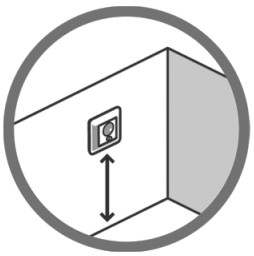
IMPORTANT: When the thermostat is used to control a floor heating element according to "Household and similar electrical appliances - Safety - EN/IEC 60335-1 : General requirements" and "EN/IEC 60335-2-96: Particular requirements for flexible sheet heating elements for room heating ", always use a floor sensor and never set the maximum floor temperature to more than 35°C.

Please also note the following:

- The installation of the thermostat must be done by an authorized and qualified installer according to local regulations.
- The thermostat must be connected to a power supply via an all-pole disconnection switch.
- The sensor is to be considered as live voltage. Have this in mind if the sensor must be extended.
- Always connect the thermostat to continuous power supply.
- Do not expose the thermostat to moisture, water, dust, and excessive heat.

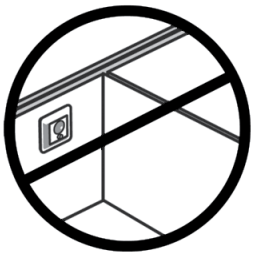
2 Mounting Instructions

Please observe the following placement guidelines:



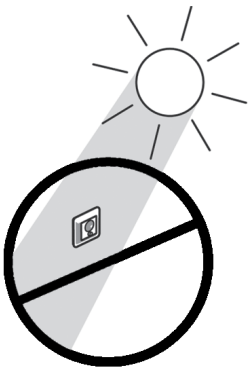
Place the thermostat at a suitable height on the wall (typically 80-170cm.).

The thermostat should not be placed in wet rooms. Place it in an adjacent room. Always place the thermostat according to local regulation on IP classes.

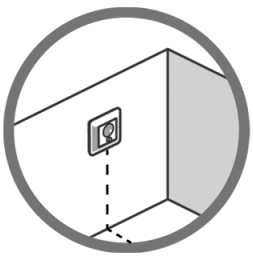


Do not place the thermostat on the inner side of an exterior wall.

Always install the thermostat at least 50 cm. from windows and doors.



Do not place the thermostat in a way that it will be exposed to direct sunlight.

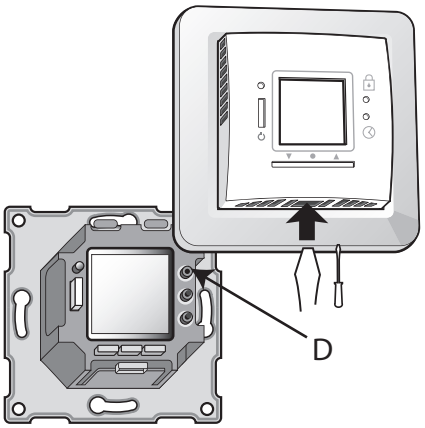


Note: A floor sensor enables a more accurate temperature control and is recommended in all floor heating applications and **mandatory** under wooden floors to reduce the risk of over-heating the floor.

- Place the floor sensor in a conduit in an appropriate place where it is not exposed to sunlight or draft from door openings.
- Equally distant and >2cm from two heating cables.
- The conduit should be flush with the floor surface - countersink the conduit if necessary.
- Route the conduit to the connection box.
- The bending radius of the conduit must be min 50mm.

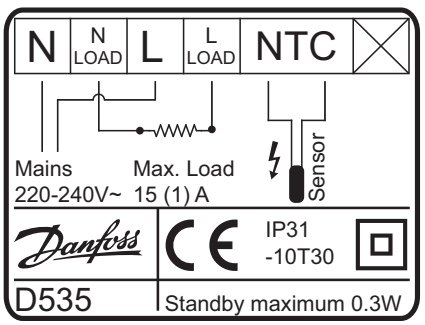
Follow the steps below to mount the thermostat:

1. Open the thermostat:



- Gently press the release tab in the bottom of the thermostat using a flat object.
- Carefully pull off the front cover.

2. Connect the thermostat according to the connection diagram.



The screen of the heating cable must be connected to the earth conductor of the power supply cable by using a separate connector.

Note: Always install the floor sensor in a conduit in the floor.

3. Mount and reassemble the thermostat.
   - Fasten the thermostat to a socket or an exterior wall box by driving the screws through the holes in each side of the thermostat.
   - Tighten the screws to fasten the thermostat.

4. Turn on the power supply.

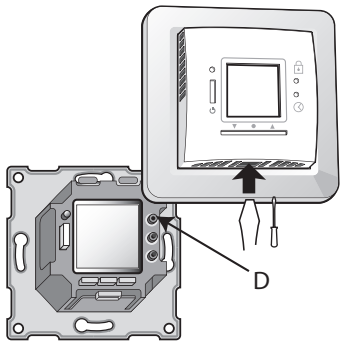
Initially main supply the thermostat for 15 hours to fully charge the battery. The current time and day is then kept for 80 days if mains supply is off. All other settings are stored permanently.

3 Settings

<u>Sensor</u>: How to specify whether an external floor sensor, the built-in room sensor or both is used to control the floor heating

Note: The floor sensor option is selected by default.

1. Press the installation button **D** with a blade end.

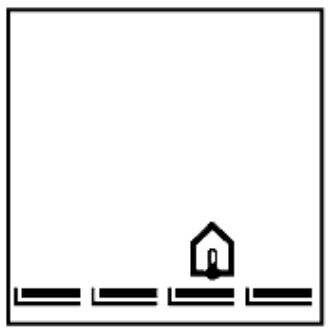


2. Press the • button.

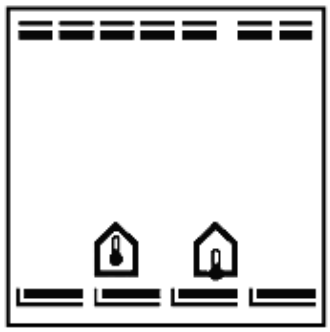
3. Select one of the following options using the ▲▼ buttons:

   If <u>only a floor sensor</u> is used, choose:

   The built-in room sensor is not used. This option is suitable for rooms in which a constant floor temperature is required, e.g. in a bathroom.

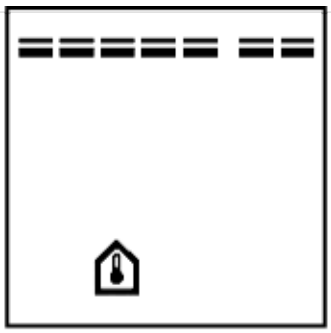


If both a room sensor and a floor sensor is used, choose:



This option is suitable for all rooms but wet rooms. The thermostat must be installed in the same room as the floor sensor and the heating elements.

If only a room sensor is used, choose:



This option is **not recommendable** due to an increased risk of overheating the floor. The thermostat must be installed in the same room as the heating elements.

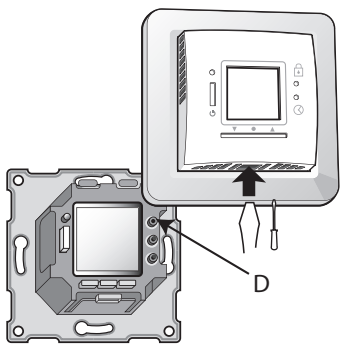
4. To accept new selected sensor mode, press •.
5. Press installation button **D** to configure settings.
6. If you have chosen the floor sensor or room/floor sensor option, press ▲▼ (up/down) buttons to continue to the next setting.

How to set the maximum floor temperature

Special condition: This setting only applies if a floor sensor is used (the floor sensor or room/floor sensor option has been set).

Note: The maximum floor temperature is set to 35°C by default.

1. To change the default temperature setting - press the • button.
2. Select the new temperature by using the ▲▼ buttons.
3. To accept the new selected temperature, press •.
4. Press installation button **D** to configure settings.



5. Press ▲▼ (up/down) buttons to continue the next setting.

Note: Please contact the floor supplier before changing the maximum floor temperature and be aware of the following:

- The floor temperature is measured where the sensor is placed.
- The temperature of the bottom of a wooden floor can be up to 10 degrees higher than the top.
- Floor manufactures often specify the max temperature on the top surface of the floor (usually 27-28˚C).
- Always use a floor sensor or a room + floor sensor combination to control floor heating. Without a floor sensor, the temperature control may be less accurate and you risk overheating the floor.

Thermal resistance [m2K/W]	Examples of flooring	Details	Approximate setting for 25˚C floor temperature
0.05	8 mm HDF based laminate	> 800 kg/m^3	28˚C
0.10	14 mm beech parquet	650 - 800 kg/m^3	31˚C
0.13	22 mm solid oak plank	> 800 kg/m^3	32˚C
< 0.17	Max. carpet thickness suitable for floor heating	acc. to EN 1307	34˚C
0.18	22 mm solid fir planks	450 - 650 kg/m^3	35°C

How to define the temperature scale

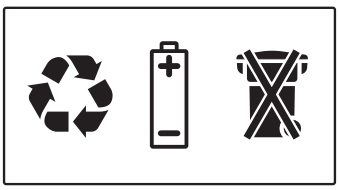
Special condition: If floor sensor is selected, the numerical scale with steps from 1 - 6 must be selected.

Note: By default, the Celsius scale is used.

1. To change the default temperature scale, press the • button.
2. Select a scale, use the ▲▼ buttons.
   You can choose between a numerical scale with steps from 1- 6 or the Celsius scale with steps from 5° - 45°.
3. To accept the selected temperature scale, press •.
4. If desired, go back or forward through your installation settings by pressing the ▲▼ (up/down) buttons.
5. Press installation button **D** to exit the installation mode.
6. Put the frame and front back on.

4 Warranty

5 Disposal Instruction



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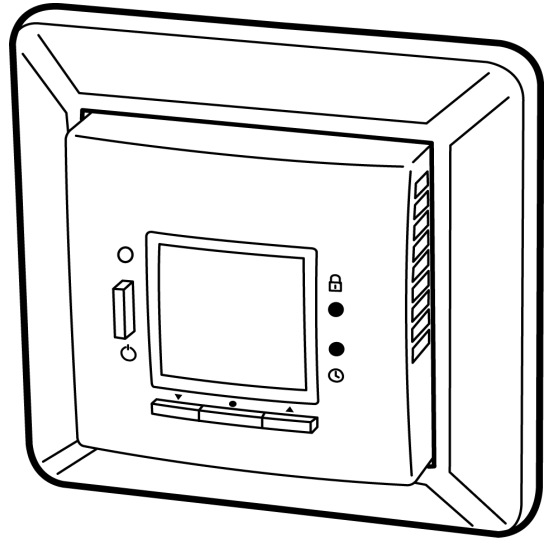
ECtemp 535 ELKO

088L0042

Timer Thermostat
Floor/Room Sensor
220-240V~
50-60Hz~
+5 to +45°C
15A/3450W@230V~
IP 31



Product Documentation

Designed in Denmark for Danfoss A/S

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